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(57) Abstract:

PURPOSE: To reduce a polymer of CF₂ and etch silicon dioxide without damaging a silicon foundation layer by exposing the silicon dioxide to the plasma of a mixed gas composed of a CF system gas and C₂H₄F₂.

CONSTITUTION: A silicon dioxide film of 4,000 \AA ; is formed on a silicon substrate and this film is etched by an etching apparatus in which the pressure can be maintained constant at 500mTorr using a mixed gas composed of C₂F₆ and C₂H₄F₂. According to the results of the experiments by varying the ratio of mixing of the mixed gas while a high frequency power of 500W is being applied between a parallel plane electrodes, when the ratio of C₂H₄F₂ is 0%, the etching rate is 1,000 \AA /min. for Si and 2,000 \AA /min. for SiO₂, when the ratio of C₂H₄F₂ is 10% or higher, the etching rate is 500 \AA /min. or

less for Si and 3,000Å/min. or more for SiO₂ and, when the ratio of C₂H₄F₂ is 40%, the etching rate is 210Å/min. for Si and 4,200Å/min. for SiO₂.

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